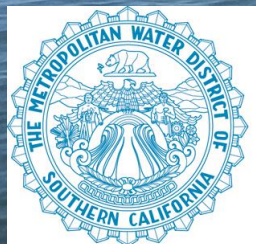


Comments on Developing Biological Goals for the Bay-Delta Plan



Shawn Acuña, Ph. D

Metropolitan Water District of Southern California

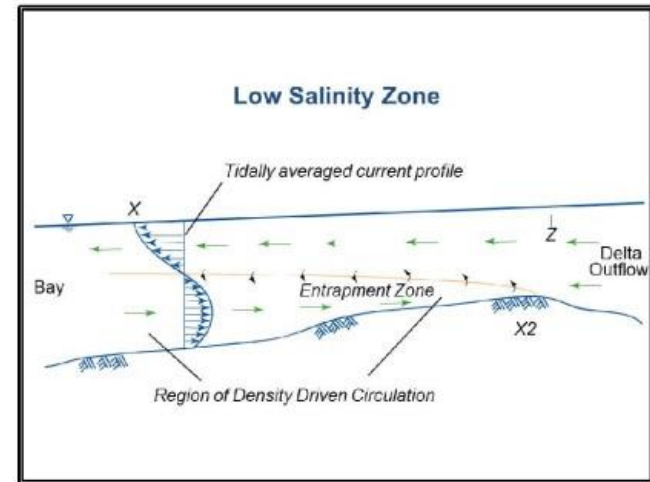


Our recommendations to Panel

- Goals should have mechanistic link to actions
- Goals should be in an adaptive management framework
- Support goals indicating functioning environments
- Existing monitoring programs should be reassessed after goals are set

Goals should have mechanistic link to actions

- Supportive of the new metrics
 - Piloting their use
 - Incorporate bias
- Uncertainty in action
- More emphasis on using mechanistic rationale for the proposed metrics



Workshop on Delta Outflows and Related Stressors Panel Summary Report

Panel

Denise Reed - Water Institute of the Gulf (*Panel Chair*)

James (Tim) Hollibaugh - University of Georgia

Josh Korman - University of British Columbia/Ecometric Consulting

Ernst Peebles - University of South Florida

Kenneth Rose - Louisiana State University

Pete Smith - United States Geological Survey, retired

Paul Montagna - Texas A&M University, Corpus Christi

May 5, 2014

Biological Objective Should Reflect Uncertainty In Model Predictions

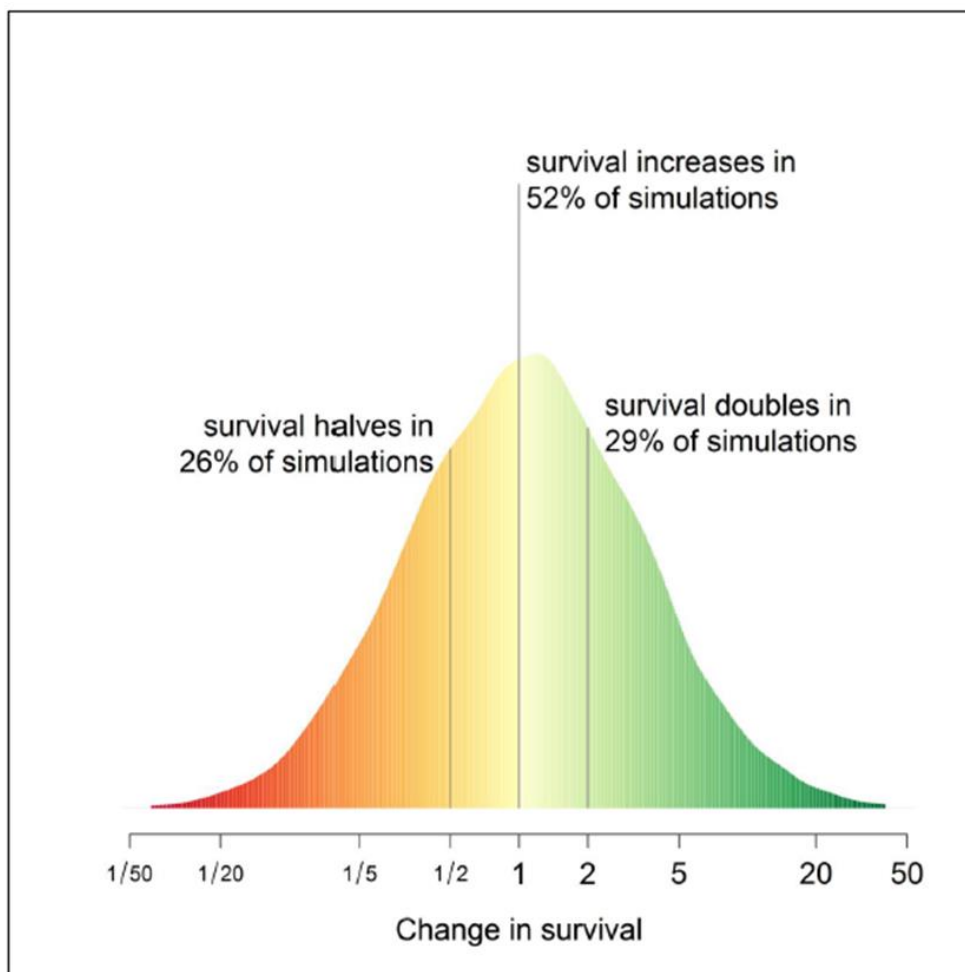


Figure 18. Posterior Density Distributions from 10,000 Simulations of the Change in Delta Smelt Fall to Summer Survival when Mean September-October X2 is Moved from 77.557 km to 74 km.

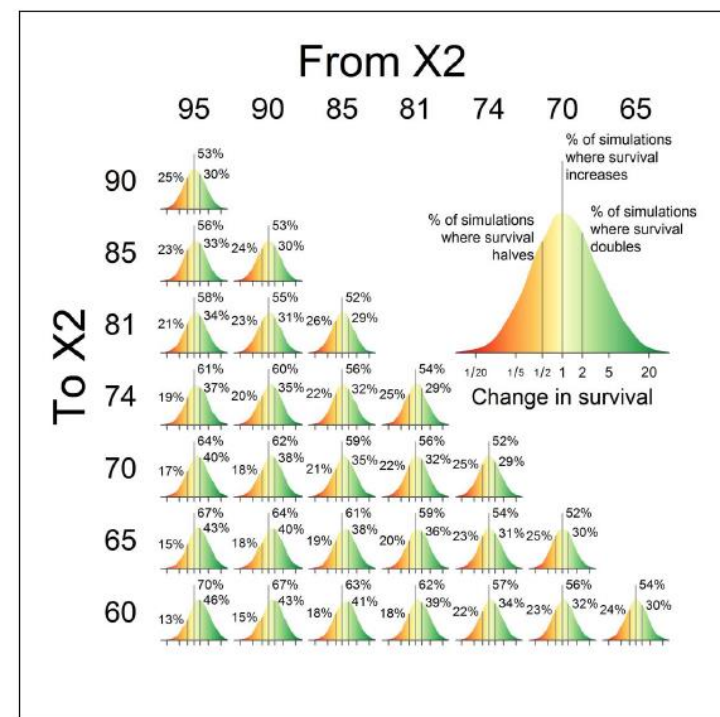
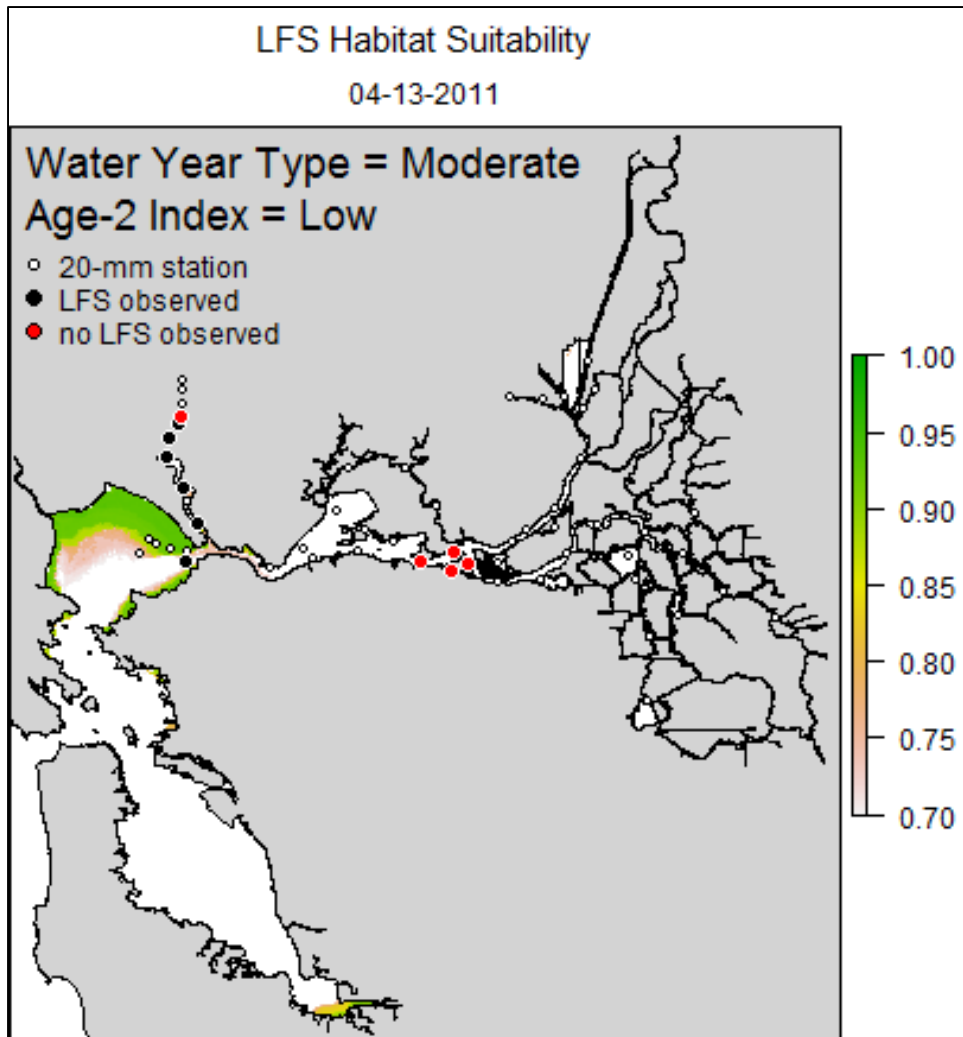


Figure 17. Posterior Density Distributions from 10,000 Simulations of the Change in Delta Smelt Fall to Summer Survival when Fall X2 is Moved from an Upstream Location to a Downstream Location.

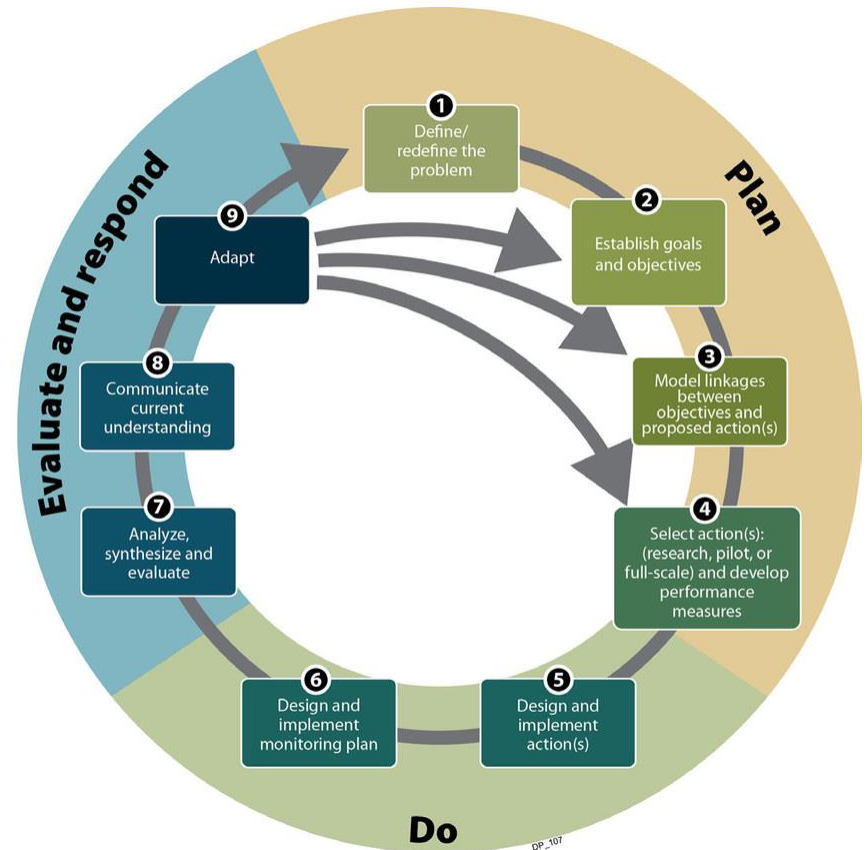
Expanded Model Discussion Would Support Development of Biological Goals



- ▶ Analysis of locations of suitable habitat characteristics for longfin smelt
 - Salinity
 - Temperature
 - Turbidity
- ▶ Longfin larval/ juvenile habitat is downstream in wet years

Goals should be in an adaptive management framework

- Panel notes adaptive management rarely used
- Suggest more emphasis of adaptive management
- Structured decision making and prioritization



Support goals indicating functioning environments

- Support use of alternative metrics
- Another approach focuses on functioning environments rather than specific fish species
 - Sensitive to management
 - Easier to detect

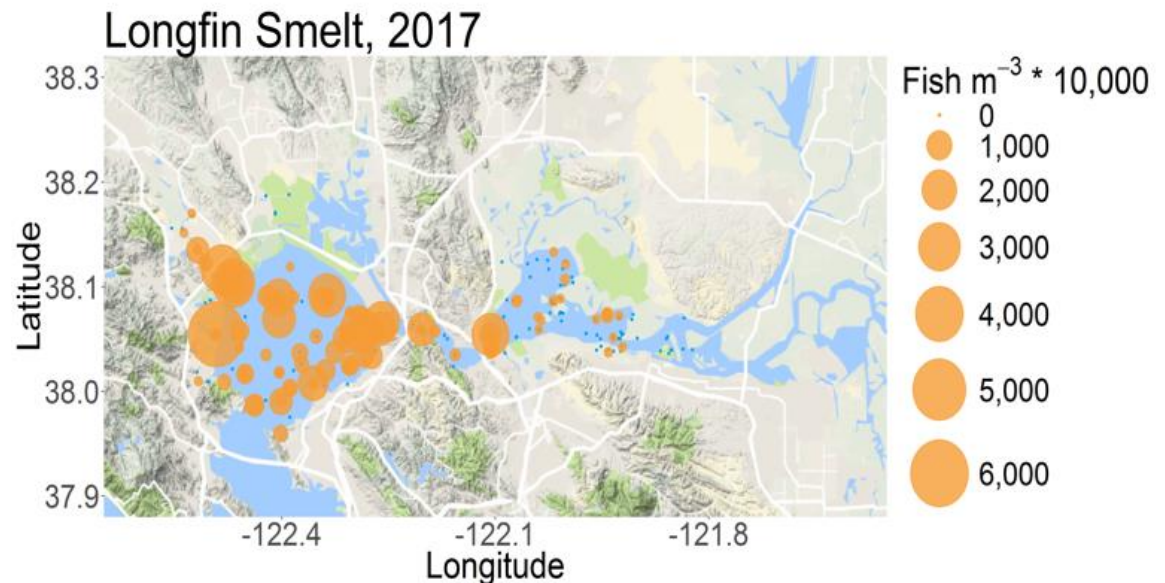
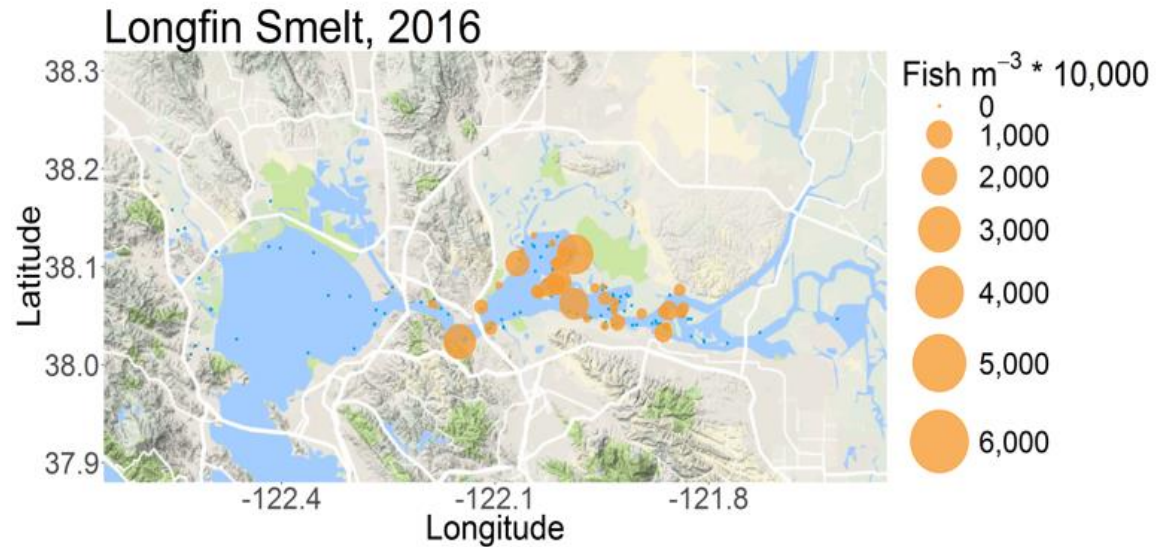


Existing monitoring programs should be reassessed after goals are set

- Monitoring should be designed to assess goals
- Expanded discussion on uncertainty and survey bias

Existing Monitoring Programs Should Be Reassessed As Part of Development of Biological Goals

- ▶ Striking difference
- ▶ 2016 Average
 - Suisun Bay
- ▶ 2017 Wet
 - San Pablo Bay
 - South Bay
 - Central Bay



Existing Monitoring Programs Should Be Reassessed As Part of Development of Biological Goals

- Multiple factors are potentially affecting catchability,
 - Secchi Depth
 - Depth
- Not accounting for bias may lead to spurious conclusions

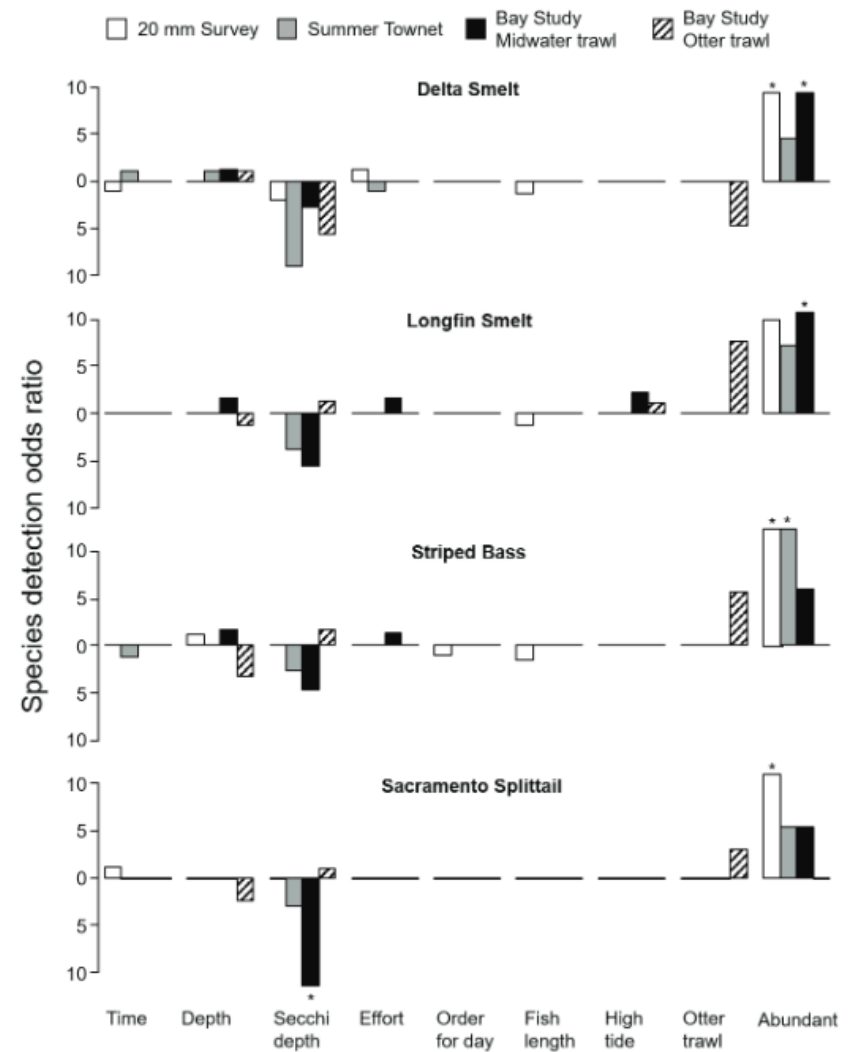
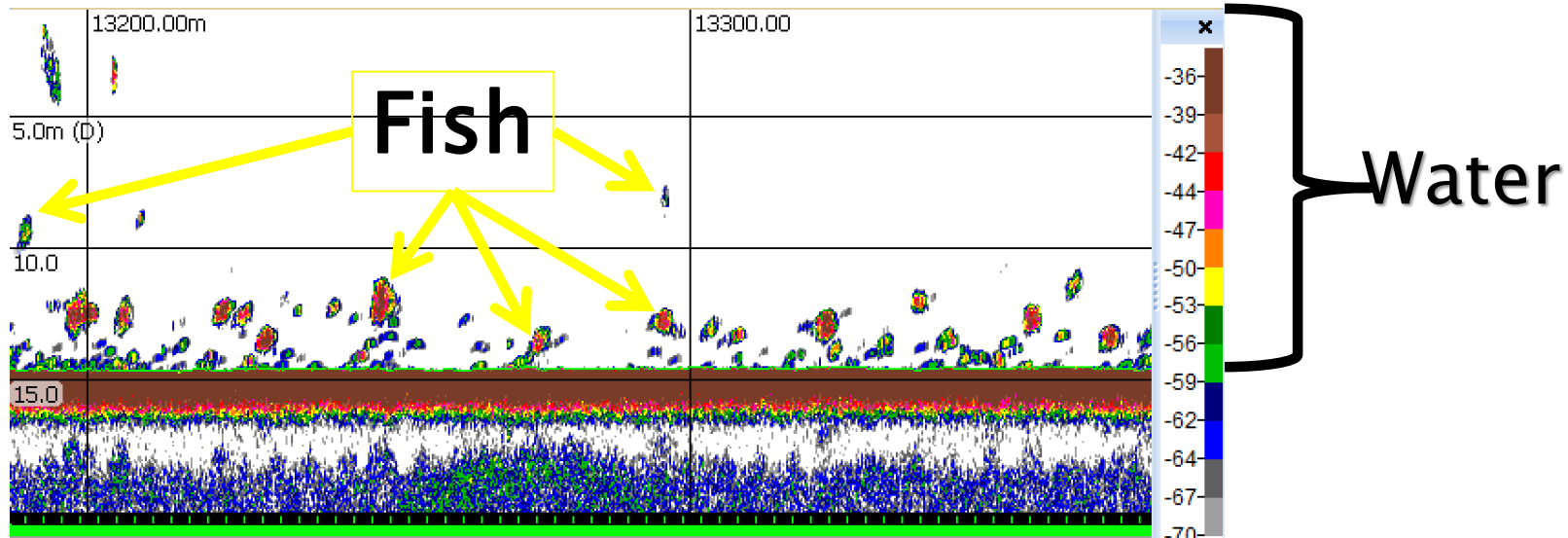


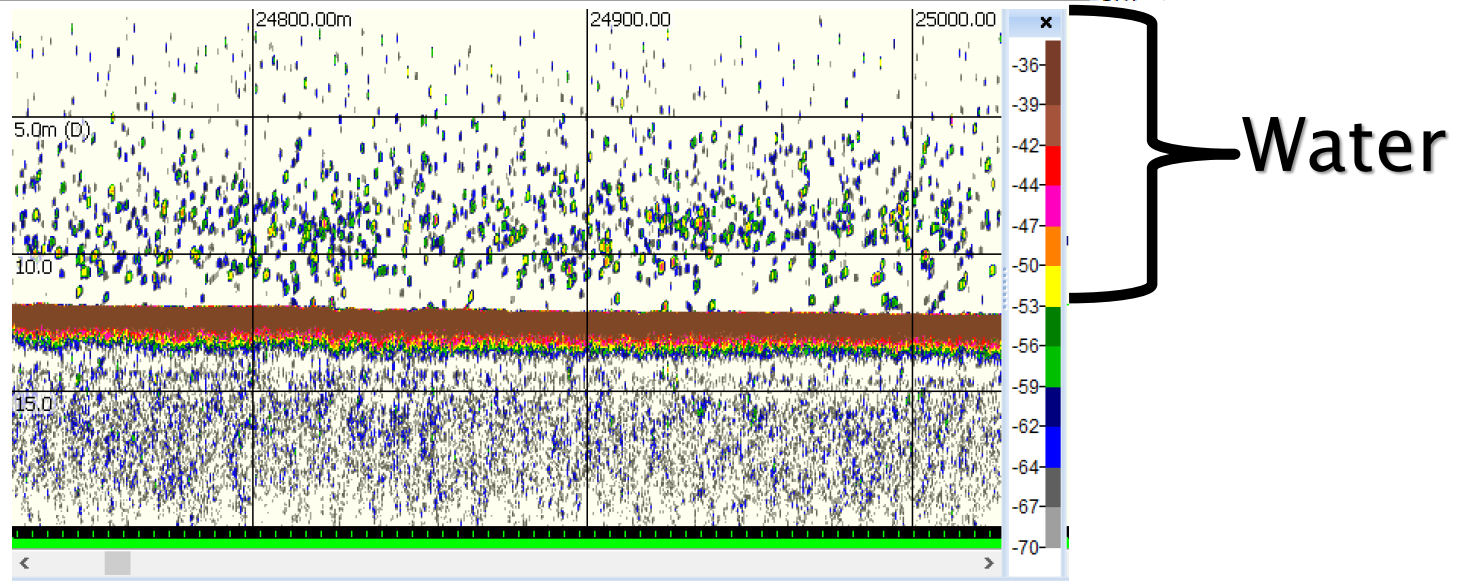
Figure 2 Estimated odds ratios for species detection probability (p^1 and p^2) from best approximating multi-state occupancy model by survey and species. Bars below the axis should be interpreted as detection is less likely, whereas bars above the axis indicate more likely. Odds ratios for continuous covariates correspond to a 1-standard deviation increase in the covariate and asterisks indicate values that exceed range plotted.

Existing Monitoring Programs Should Be Reassessed As Part of Development of Biological Goals

Day



Night



Summary

- Support recommendations
 - Novel metrics
 - Pilot and validation using AM
- Suggest including:
 - mechanistic link to actions
 - goals in adaptive management framework
 - Goals to support functioning environment
 - existing monitoring programs assessed after goals developed

